gutta percha tubing for telegraphs, that he had invented a method of preserving the tube from damage when laid under water. The pipe into which the wire covered with gutta percha was placed, consisted of a tube of metal, jointed at every 2 or 3 feet, as the sinuosities of the river or the various levels of its bed required. Twelve hundred feet had been laid down in the Rhine near to Cologne, and it had answered its purpose well. The tube was payed out from a vessel, and pinned down to the bed of the river, accommodating itself to any sinuosity or change of level. Mr. Roberts described a machine for forming mouldings in sheet metal, which seems worth attention. Mr. Robert Davison explained the desiccating process, the principle of which is, that in drying any body, it is not simply heat that is required, but a current of air also; not merely a moving but a rapid current of air. It is the impulsion of atmospheric air at the velocity of the hurricane, or upwards of 100 miles per hour, combined with the elementary heat, under perfect control, which constitutes the desiccating process. Our readers have much on this subject before them from the advocates of different systems, and may weigh the evidence on both sides.

Last Monday evening was set apart for a discourse from Professor Willis, "On the Application of Mechanical Science to Railways" according to the programme, but which, as the professor himself remarked, ought to have been on *an* application of science to that subject. It will be remembered that soon after the fracture of the Dee-bridge girder, a commission was appointed to inquire into the use of iron for railway bridges, &c. The commission, which included Mr. Willis, have tried a number of experiments on a very large scale at Portsmouth, and have sent in their report, and the object of the lecturer was to put before the members of the association, in a popular form, one of the principal results of the inquiry. Their experiments were made to show the difference of effect on railway girders when a locomotive is at rest upon it and when traveling over, and this important fact was established, namely, that the deflection caused by the weight of the locomotive *was increased in proportion to the velocity*, even as much as three times. The inference, the professor said, seemed painful, namely, that bridges which had been calculated to bear safely the weight of a train which would have to pass over them might not be able to resist the strain caused by it in motion. But he afterwards gave reasons why, in practice, there was not really cause for alarm; but this part of the subject was not made very clear. The curve produced by the deflection through different velocities was shown by simple apparatus, and it was seen that the increased deflection took place, not when the weight was in the middle of the bar, but when in the second half of its length.

The discourse was delivered in the Town-hall, and had a large audience. The ceiling and walls of this fine apartment, by-the-way,* have been chromatized, with good effect, and we may mention that the scaffolding is up for the completion of the back of the building externally, under Mr. Edge, and that masons are preparing the stone-work.

Considerable additions are being made to Queen's College, and, in another part of the town, some industrial schools of Tudor character are nearly completed.

For the Exposition of Industrial Art, a large structure of timber has been erected, under the direction of Mr. Hussey, architect, at a cost of 750*l*. A subscription was raised to defray this and other expenses, but the money taken at the doors, if so applied, will render the subscription unnecessary. Some, however, are anxious that the money received should not be appropriated in this manner, but be applied in the formation of a permanent museum, much to be desired in Birmingham, and we trust they will succeed in effecting this arrangement. So long ago as 1839, when the association met first in Birmingham, the conductor of this journal suggested, through the *Midland Counties Herald*, that a temporary museum of manufacturing processes which had been formed, should be kept together permanently as the nucleus of a perfect collection illustrative of our manufactures, but the time had not then come, and the collection was dispersed. Let us hope for a better result on the present occasion.*

The present exposition is exceedingly interesting, and bears honourable testimony to the advance made in Birmingham in the union of art with manufactures during the last few years. At first sight of the collection our anticipations were scarcely realized, but this was rather owing to our knowledge, bit by bit, of all that had been done, and in consequence of which, therefore, there was little to surprise us,—than to any short-comings on the part of the Birmingham manufacturers. When we remember that the very name of the town as applied to works formerly conveyed a positive condemnation, and then examine the specimens of artistical manufacture now collected, the enormous improvement which has been effected and is going on, becomes strikingly evident. In glass, in porcelain, in silver and plated ware, in iron, forms of great beauty are exhibited, and deserve to be inspected by all who can contrive to pay Birmingham a visit. We should have been glad to have found the names of some of the *designers* of these noticed. One of the tables contains a large collection of French bronzes, the works of various foreign manufacturers, and serves to show how much we have yet to do in this branch of industrial art. The committee acted wisely in admitting these. The proprietors of the table scarcely expected they would have been permitted to exhibit their wares (they are all priced for sale), and said to us candidly, that far more liberality had been shown towards them than Englishmen under similar circumstances would receive in France. We are quite contented that England is, in such feelings, in advance.

The most important contribution by any single firm is the collection of ecclesiastical furniture (for Roman Catholic uses), and decorations, exhibited by Messrs. Hardman and Co. Such an amount of fine work in metal has never before been seen together in modern England. Pastoral staves, candlesticks, brackets, chandeliers, monumental brasses, stained glass, oak cabinets, tapestry, and paper-hangings (the latter executed by Messrs. Crace), assisted by a foreground of tiles by Minton, form a whole of extraordinary excellence. Mr. Hardman, the exception to the rule, has given the name of the designer,—Mr. Pugin.

Many of the series of specimens illustrative of manufacturing processes are very curious, and no less instructive. Some of our readers would stare to see, for example, in the manufacture of a simple brass rack-pulley, that the piece of metal of which it is formed passed through thirty-seven stages.

We must run away, however, just to ask permission at the Workhouse to see the selected plans for the intended Union, a course which we thought necessary, to prevent the possible reproach hereafter that we had promulgated untrue statements, when, being in the town, we might have seen and judged for ourselves. With some little difficulty we found out the retreat of pauperism, and stated our wish and motive. The Clerk of the Guardians, Mr. Corder, a polite, common-sense man, could see no reason why this should be refused, the selected design having been approved by the Poor-law Board and returned, but he had no power to comply. He would, however, obtain authority from some of the guardians, who were then assembling. One was asked, and another was appealed to; but each shook his head, like a true descendant of Lord Burleigh, and it was ultimately decided that a reply could be obtained only by formal application to the Board. Not being disposed to spend in the workhouse of Birmingham the short time we had to stay in the "workshop of the world," waiting the doubtful result of a discussion on this knotty point, we left them in the quiet possession of their plans, and sighed for the hour we had wasted in the ineffectual attempt to fit ourselves to do justice.*

We afterwards looked in at the Exhibition of Modern Works of Art, but found little there beyond pictures already exhibited in London, including some by W. Linton, Inskipp, Stanfield, Collins, Anthony, Etty, Uwins, Leslie, O'Neil, Redgrave, Turner, and others; a pleasant collection, nevertheless, which restored our equanimity, and enabled us to leave Birmingham in better humour than we left the workhouse.

Greenwich Naval Gallery. — Eight pictures, illustrative of the life of Lord Viscount Nelson, have been purchased by subscription, and deposited in the Naval Gallery of Greenwich Hospital, at a cost of 300*l*., of which the sum of 136*l*. was contributed by Mr. Jasper de Sainte Croix.

* The hall is 140 feet long, 65 feet wide, and 65 feet high.

* As the suggestion applies now as it did then, we venture to reprint a part of the letter:—

"*To the Editor of the Midland Counties Herald.*

"The collection of manufactured articles and scientific inventions brought together through the exertions of the members of the British Association, and now exhibiting at the Grammar School in this town, is so honourable, not merely to Birmingham but to England, that one cannot but feel regret that at the end of the week the whole will be broken up, and each of the several objects returned to its respective owner. To prevent this *altogether* is not practicable, on account of the great cost of the specimens (perhaps, indeed, it is not even desirable), but with respect to some of the subjects, it seems to me to be absolutely necessary that endeavours should be made to retain them for the public service. I allude, Sir, to the several most interesting *series* of specimens distributed throughout the room, illustrative of different materials and various processes of manufacture: for example, those showing, in all their various stages and applications, copper, iron, lead, steel, and German silver; and the collections illustrative of the manufacture of buttons, pins, files, papier maché, flint-glass, plated articles, and porcelain. These, invaluable as they may become when collected, are comparatively of little cost; and what I would suggest, Sir, is, that a subscription should be made at once to purchase them from their owners; and then, that they should be presented to one of the local museums, or placed in the Town Hall, where they would form a nucleus for a perfect collection, illustrative of our manufactures. Of the value of such a museum, now nowhere existing, it is not necessary to speak. Each of these series may be regarded as a perpetual, although silent *lecturer*: they at once plainly tell their own story, and open the minds of the observers to wonders before unthought of.

"August, 1839." "GEORGE GODWIN."

* We are informed that at the meeting of the board, after we left, the communication from the Poor-Law Board, expressing approval of the plans of Messrs. Drury and Bateman, which had been recommended for adoption by the architects appointed to examine the competing plans, was read. No discussion ensued, and it is expected that the building will be proceeded with immediately. One out of several fresh correspondents on this subject writes thus:—"There is a curious coincidence about this second competition, which appears to have been as yet overlooked. Upon turning to your journal of the 10th of February, I find a paragraph which begins in this manner:—'The voting in committee on the seven selected plans terminated thus:—Mr. Hemming (Birmingham), 17; Messrs. Drury and Bateman (Birmingham), 16; the rest, nowhere.' And you may now again respond, '*the rest nowhere.*' No doubt the judges, like Brutus and Cassius, are 'honourable men;' but they have made one sad mistake, and appearances are against them." The writer afterwards asked, "What has become of the second premium?"

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